



## NUCLEAR REGULATORY COMMISSION

[NRC-2018-0066]

### Dry Storage and Transportation of High Burnup Spent Nuclear Fuel

**AGENCY:** Nuclear Regulatory Commission.

**ACTION:** NUREG; issuance.

**SUMMARY:** The U.S. Nuclear Regulatory Commission (NRC) is issuing NUREG-2224, “Dry Storage and Transportation of High Burnup Spent Nuclear Fuel.” The NUREG provides technical background information applicable to high burnup spent nuclear fuel (HBU SNF), provides an engineering assessment of recent NRC-sponsored mechanical testing of HBU SNF, and presents example approaches for licensing and certification of HBU SNF in transportation and dry storage.

**ADDRESSES:** Please refer to Docket ID **NRC-2018-0066** when contacting the NRC about the availability of information regarding this document. You may obtain publicly available information related to this document using any of the following methods:

- **Federal Rulemaking Web Site:** Address questions about Docket IDs in Regulations.gov to Jennifer Borges; telephone: 301-287-9127; e-mail: [Jennifer.Borges@nrc.gov](mailto:Jennifer.Borges@nrc.gov). Go to <https://www.regulations.gov> and search for Docket ID **NRC-2018-0066**. For technical questions, contact the individuals listed in the **FOR FURTHER INFORMATION CONTACT** section of this document.

- **NRC’s Agencywide Documents Access and Management System (ADAMS):** You may obtain publicly available documents online in the ADAMS Public Documents collection at <https://www.nrc.gov/reading-rm/adams.html>. To begin the search, select “[Begin Web-based ADAMS Search](#).” For problems with ADAMS, please contact the NRC’s Public Document Room (PDR) reference staff at 1-800-397-4209, 301-415-4737, or by e-mail to [pdr.resource@nrc.gov](mailto:pdr.resource@nrc.gov). The ADAMS accession number

for each document referenced in this document (if that document is available in ADAMS) is provided the first time that a document is referenced.

- **FOR FURTHER INFORMATION CONTACT:** Ricardo Torres, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington DC 20555 0001; telephone: 301-415-7508, e-mail: Ricardo.Torres@nrc.gov,.

## **SUPPLEMENTARY INFORMATION:**

### **I. Discussion**

NUREG-2224, “Dry Storage and Transportation of High Burnup Spent Nuclear Fuel” (ADAMS Accession No. ML20191A321), is a technical basis document which expands on the aspects that pertain to hydride reorientation in HBU SNF cladding, as discussed in SFST-ISG-11, Revision 3, “Cladding Considerations for the Transportation and Storage of Spent Fuel” (ADAMS Accession No. ML033230335), NUREG-2215, “Standard Review Plan for Spent Fuel Dry Storage Systems and Facilities – Final Report” (ADAMS Accession No. ML20121A190), and NUREG-2216, “Standard Review Plan for Transportation Packages for Spent Fuel and Radioactive Material: Final Report” (ADAMS Accession No. ML20234A651). Hydride reorientation is a process in which the orientation of hydrides precipitated in HBU SNF cladding during reactor operation changes from the circumferential-axial to the radial-axial direction. NUREG-2224 provides an engineering assessment of the results of NRC-sponsored research (NUREG/CR-7198, Rev. 1, “Mechanical Fatigue Testing of High-Burnup Fuel for Transportation Application” ADAMS Accession No. ML17292B057) on the mechanical performance of HBU SNF following hydride reorientation. Per the conclusions of that assessment, NUREG-2224 presents example approaches for licensing and certification of HBU SNF for transportation (under part 71 of title 10 of the *Code of Federal Regulations* (10 CFR), “Packaging and Transportation of Radioactive Material”) and dry storage (under 10 CFR part 72, “Licensing Requirements for the Independent Storage of

Spent Nuclear Fuel and High-Level Radioactive Waste, and Reactor-Related Greater Than Class C Waste”).

## **II. Additional Information.**

On August 9, 2018 (83 FR 39475), the NRC solicited comments on draft NUREG-2224, “Dry Storage and Transportation of High Burnup Spent Nuclear Fuel.” The initial public comment period closed on September 24, 2018. Responding to several requests from the public, the NRC reopened the public comment period on October 10, 2018 (83 FR 50965), to allow more time for members of the public to develop and submit their comments. The staff considered public comments received on the draft document in preparing the final NUREG-2224. A summary of the public comments and staff responses are available in ADAMS under Accession No. ML20120A444.

## **III. Regulatory Analysis**

The NRC prepared a regulatory analysis on this action. The analysis examines the costs and benefits of the alternatives considered by the NRC. The regulatory analysis is available at ADAMS Accession No. ML20188A027.

## **IV. Backfitting, Forward Fitting, and Issue Finality Provisions**

This NUREG (NUREG-2224) sets forth the NRC’s position regarding acceptable approaches for demonstrating regulatory compliance in applications for dry storage cask Certificates of Compliance (CoCs), CoCs for transportation packages, and specific licenses for Independent Spent Fuel Storage Installations (ISFSIs) involving HBU SNF. The issuance of this NUREG would not constitute backfitting as defined in the backfitting provisions in 10 CFR 72.62 and would not implicate forward fitting as described in Management Directive (MD) 8.4, “Management of Backfitting, Forward Fitting, Issue Finality, and Information Requests,” for specific ISFSI licensees. Dry storage cask CoCs do not fall within the backfitting provision in 10 CFR 72.62, and there are no backfitting provisions in 10 CFR part 71 regarding CoCs for transportation packages. Issuance of the NUREG would also not constitute backfitting or forward fitting under 10 CFR 50.109

or MD 8.4, or otherwise be inconsistent with issue finality provisions in 10 CFR part 52, that are applicable to general ISFSI licensees. The NRC's position is based upon the following considerations.

1. The NUREG does not constitute backfitting or forward fitting or affect issue finality. The NUREG provides licensing and certification approaches acceptable to the NRC staff for demonstrating regulatory compliance in applications for dry storage cask CoCs, CoCs for transportation packages, and specific ISFSI licenses involving HBU SNF. Changes in staff guidance, without further NRC action, are not matters that meet the definition of backfitting or forward fitting or affect the issue finality of a 10 CFR part 52 approval.

2. Current or future applicants who may use this guidance in developing acceptable approaches for demonstrating regulatory compliance in applications for dry storage cask CoCs, CoCs for transportation packages, and specific ISFSI licenses involving HBU SNF in the future are not—with limited exceptions not applicable here—within the scope of the backfitting and issue finality regulations. Applicants are not, with certain exceptions, covered by either the Backfit Rule or any issue finality provisions under 10 CFR part 52. This is because neither the Backfit Rule nor the issue finality provisions under 10 CFR part 52—with certain exclusions not applicable here—were intended to apply to every NRC action which substantially changes the expectations of current and future applicants. If, in the future, the staff seeks to impose a position in the NUREG in a manner that constitutes backfitting or does not provide issue finality as described in the applicable issue finality provision, then the staff would need to address the Backfit Rule or the criteria for avoiding issue finality as described in the applicable issue finality provision.

3. The staff does not, at this time, intend to impose the positions represented in the NUREG in a manner that would constitute forward fitting. If, in the future, the staff seeks to impose a position in the NUREG in a manner that constitutes forward fitting, then the staff would need to address the forward fitting criteria in MD 8.4.

## **V. Congressional Review Act**

This NUREG is a rule as defined in the Congressional Review Act (5 U.S.C. §§ 801-808). However, the Office of Management and Budget has not found it to be a major rule as defined in the Congressional Review Act.

Dated: November 25, 2020.

For the Nuclear Regulatory Commission.

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